

### 3.9 Solving the Pt of Int .notebook

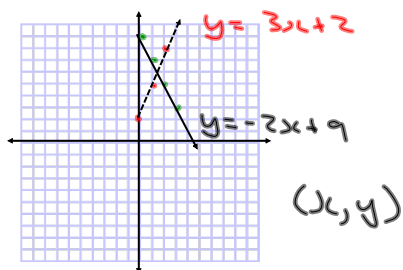
April 25, 2012

#### 5.9 Problem Solving and Linear Relationships

Finding the Pt of Intersection between two lines

$$y = 3x + 2$$

$$y = -2x + 9$$



Apr 25-7:39 AM

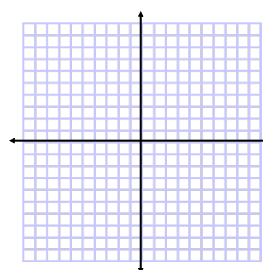
#### 5.9 Problem Solving and Linear Relationships

Finding the Pt of Intersection between two lines

Solve Graphically

$$y = 3x + 2$$

$$y = -2x + 9$$



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Solve Pt of Intersection Algebraically

$$y_1 = 4x - 5 \quad y_2 = x + 1$$

$$y_1 = y_2$$

$$4x - 5 = x + 1$$

$$4x - x - 5 = +1$$

$$3x - 5 = 1$$

$$3x = 1 + 5$$

$$3x = 6$$

$$x = 2$$

Pt of Int  
(2, 3)

$$y_2 = x + 1$$

$$y_2 = 2 + 1$$

$$y = 3$$

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Solve Algebraically Steps

$$y = 3x + 6$$

&

$$y = 8x - 10$$

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Solve Algebraically Steps

$$y = 3x + 6$$

&

$$y = 8x - 10$$

$$y_1 = y_2$$

$$3x + 6 = 8x - 10$$

$$6 = 8x - 3x - 10$$

$$6 = 5x - 10$$

$$6 + 10 = 5x$$

$$16 = 5x$$

$$\frac{16}{5} = x$$

iv) Solve for y

$$y_1 = 3x + 6$$

$$y_1 = 3\left(\frac{16}{5}\right) + 6$$

$$y_1 = \frac{48}{5} + 6$$

$$y_1 = \frac{48}{5} + \frac{30}{5}$$

$$y_1 = \frac{78}{5}$$

v) State P.

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$$y = 4x - 3 \quad 2x + 3y = 6$$

$$y_1 = y_2$$

$$3(4x - 3) = (-\frac{2}{3}x + 2)$$

$$12x - 9 = -\frac{2}{3}x + 6$$

$$12x - 9 = -2x + 6$$

$$12x + 2x = 6 + 9$$

$$\frac{14x}{14} = \frac{15}{14}$$

$$x = \frac{15}{14}$$

Sub 15/14

$$y = 4x - 3$$

$$y = 4\left(\frac{15}{14}\right) - 3$$

$$y = \frac{60}{14} - 3$$

$$y = \frac{60}{14} - \frac{42}{14}$$

$$y = \frac{18}{14}$$

$$\left(\frac{15}{14}, \frac{18}{14}\right)$$

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Hmk. p. 326-327 q. 1, 2 a)c)e)m)o)q), 4-7, 9-12

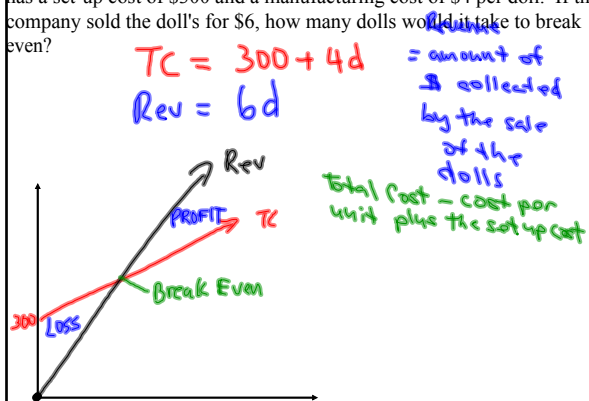
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Day 2

Interpreting the Point of Intersection

Find the Break Even Point for a toy doll manufacturer. The company has a set-up cost of \$300 and a manufacturing cost of \$4 per doll. If the company sold the doll's for \$6, how many dolls would it take to break even?



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$$\begin{aligned}
 TC &= 300 + 4d & Rev &= 6d \\
 y_1 &= 4x + 300 & y_2 &= 6x \\
 y_1 &= y_2 \\
 4x + 300 &= 6x \\
 300 &= 6x - 4x \\
 300 &= \frac{2x}{2} \\
 150 &= x
 \end{aligned}$$

$y_2 = 6x$   
 $y_2 = 6(150)$   
 $y_2 = 900$   
 At of Intersection (150, 900)

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At 150 dolls the toy doll manufacturer will break even at \$900. Before 150 dolls the company will lose money. After 150 dolls the company will earn a profit.

Apr 27-3:01 PM

p158 q6 Cost Comparison  $x = \# \text{ of movies}$

Movies to Go =  $2.50x$   
 Video rentals =  $2.00x + 10$   
 $y_1 = 2.50x$   $y_2 = 2.00x + 10$   
 $y_1 = y_2$   
 $2.50x = 2.00x + 10$   
 $2.50x - 2.00x = 10$   
 $.50x = 10$   
 $\frac{.50x}{0.50} = \frac{10}{0.50}$   
 $x = 20$

$y_1 = 2.50x$   
 $y_1 = 2.50(20)$   
 $y = 50$

At 20 movies both stores will charge \$50. At less than 20 movies Movies to Go is cheapest. After 20 movies Video rentals is cheapest.

p159 q159 q7, 9, 10, 11

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